C-RiSe

The Climate Risk in the Seacoast: Assessing Vulnerability of Municipal Assets and Resources to Climate Change (C-RiSe) project provides maps and assessments of flood impacts to infrastructure and natural resources in the coastal Great Bay region associated with projected increases in storm surge, sea level, and precipitation.

TOWN OF DURHAM

Map 11: Climate Ready Culverts
Sea-Level Rise 1.7', 4.0', 6.3'

CRiSe Culvert/Crossing ID

Grid Key:

10 -YR Rating	25-YR Rating
50-YR Rating	100-YR Rating

10-YR: Rating for the water's surface elevation at the inlet for the 10-yr flood flow

25-YR: Rating for the water's surface elevation at the inlet for the 25-yr flood flow

50-YR: Rating for the water's surface elevation at the inlet for the 50-yr flood flow

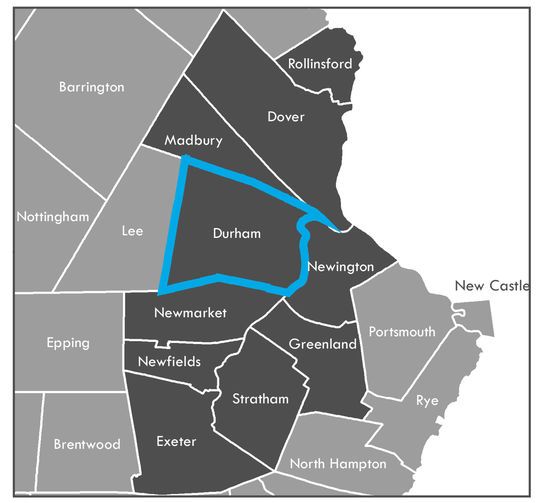
100-YR: Rating for the water's surface elevation at the inlet for the 100-yr flood flow

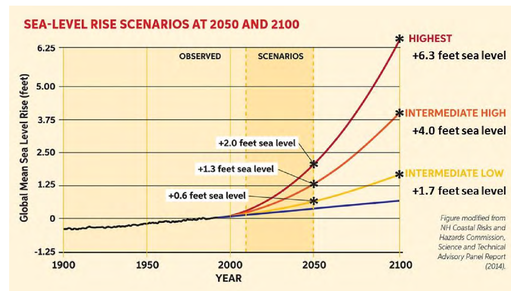
Hydraulic Ranking Key:

- Pass: Headwater stage is below the lowest top of top of culvert at the site
- Transitional: Headwater stage is between the lowest top of culvert and the top of the road
- Fail: Headwater stage overtops the road

Aquatic Organism Passage (AOP) Key

- No AOP
- No AOP - Adult Salmonids
- Reduced AOP
- Full AOP





Sea-Level Rise Scenarios

Please note that the sea-level rise scenarios used in this assessment were derived from the Wake, 2011 report (refer to table of values below from this report). These scenarios were selected prior to the release of the Science and Technical Advisory Panel Report to the N.H. Coastal Risks & Hazards Commission, in August, 2014 [1]. While slightly different than the scenarios cited in that report, they yield coverage estimates that are within the mapping margin of error.

[1] Wake CP, Kirshen P, Huber M, Knuuti K, and Stampone M (2014) Sea-level Rise, Storm Surges, and Extreme Precipitation in Coastal New Hampshire: Analysis of Past and Projected Future Trends, prepared by the Science and Technical Advisory Panel (STAP) for the New Hampshire Coastal Risks and Hazards Commission.

	2050		2100	
	Lower	Higher	Lower	Higher
Current Elevation of MHHW a,b	4.4	4.4	4.4	4.4
100-Year Flood Height	6.8	6.8	6.8	6.8
Subsidence	0.0	0.0	0.0	0.0
Eustatic SLR	1.0	1.7	2.5	6.3
Total Stillwater Elevation a,c	**12.2**	**12.9**	**13.7**	**17.5**

a - NAVD: North American Vertical Datum of 1988
b - MHHW: Mean Higher-High Water at Fort Point, NH
c - Total Stillwater Elevation may not equal total of components due to rounding

Table 13. Estimates (in feet) of future 100-year flood Stillwater elevations at Fort Point under lower and higher emission scenarios (relative to NAVD88) based on the statistical analysis presented in this report.

Wake CP, E Burakowski, E Kelsey, R Hoyhoe, A Stone, C Watson, E Douglas (2011) Climate Change in the Piscataqua/Great Bay Region: Past, Present, and Future. Carbon Solutions New England Report for the Great Bay (New Hampshire) Stewards."

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Path: M:\Region\Project_Special_Merit\Mapping\Culverts_1_3.mxd

Data Sources:
Data sets were retrieved from the NH GRANIT database, December, 2015. Digital data in NH GRANIT represent the efforts of the contributing agencies to record information from the cited source materials. Earth Systems Research Center (ESRC), under contract to the Office of Energy & Planning (OEP), and in consultation with cooperating agencies, maintains a continuing program to identify and correct errors in these data. Neither OEP nor ERSC make any claim as to the validity or reliability or to any implied uses of these data.

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Base Features

- Extent of Sea-Level Rise 1.7'
- Extent of Sea-Level Rise 4.0'
- Extent of Sea-Level Rise 6.3'
- 100-Year Floodplain
- Municipal Boundaries
- Waterbodies
- Rivers and Streams
- Class I Trunk Line Highway
- Class II State Aid Highway
- Class III Recreational Road
- Class V Town Road
- Class VI Not Maintained
- Private

1 inch = 1,363 feet

0 0.275 0.55 1.1 1.65 Miles

Climate Ready Culverts: Town of Durham

Culvert Crossing ID & Location	*Precipitation Flood Flow				***Aquatic Organism Passage (AOP) Rating
	10-YR	25-YR	50-YR	100-YR	
	**Hydraulic Rating				
#28: Madbury Rd over Littlehole Creek	Fail	Fail	Fail	Fail	No AOP
#29: Edgewood Rd over Littlehole Creek	Transitional	Fail	Fail	Fail	Reduced AOP
#30: Bagdad Rd over Littlehole Creek	Fail	Fail	Fail	Fail	Reduced AOP
#31: Madbury Rd over Reservoir Brook	Transitional	Transitional	Transitional	Transitional	Full AOP
#32: Griffith Dr over Unnamed Stream	Fail	Fail	Fail	Fail	Reduced AOP
#33: Bennett Rd over Woodman Brook	Fail	Fail	Fail	Fail	No AOP
#34: Bennett Rd over LaRoche Brook	Fail	Fail	Fail	Fail	Reduced AOP
#35: Bennett Rd over Beaudette Brook	Fail	Fail	Fail	Fail	Reduced AOP
#36: Longmarsh Rd over Longmarsh Brook	Fail	Fail	Fail	Fail	Reduced AOP
#37: Route 108 over Hamel Brook	Fail	Fail	Fail	Fail	Full AOP